3. (Amended) A transducer element as claimed in claim 1 in which the or each region of permanent magnetisation is arcuate with respect to said axis.

4. (Amended) A transducer element as claimed in claim 1 in which the or each region of permanent magnetisation is an interrupted annulus.

5. (Amended) A transducer element as claimed in claim 1 in which the or each region of permanent magnetisation is annular.

6. (Amended) A transducer element as claimed in claim 1 in which said structure has a generally radially extending surface to which the or each magnetised region extends.

7. (Amended) A transducer element as claimed in claim 1 in which said member has a generally disc-like structure.

Sub A5 Cont

8. (Amended) A transducer element as claimed in claim 1 in which there are two regions of permanent magnetisation; each being magnetised in an axial direction and the polarities of magnetisation of the two regions being opposite.

9. (Amended) A transducer element as claimed in claim 7 in which said structure has two radially-extending surfaces to which the or each region of permanent magnetisation extends and further comprising means located at one of sad two surfaces to close a flux path between the two regions.

10. (Amended) A transducer element as claimed in claim 1 in which there are two regions of permanent magnetisation providing radially-spaced magnetic poles of opposite polarity at a surface of the member.

11. A transducer element as claimed in claim 9 in which a flux path linking said regions is closed within the material of said member.

12. (Amended) A transducer element as claimed in claim 1 in which there are two regions of permanent magnetisation, each being circumferentially magnetised and the polarities of circumferential magnetisation of the two regions being opposite.

13. (Amended) A transducer element as claimed in claim 1 in which there is a single region of permanent magnetisation which extends obliquely to said axis.

14. A transducer element as claimed in claim 13 in which said structure is generally disc-like and includes a step portion in which said single region is provided.

C1 Cont'd Sub AS Cont

15. (Amended) A stress sensing transducer system comprising a transducer element which is as claimed in claim 1 and which is subject to stress generated between said radially inner and outer regions of said structure through said at least one magnetised region to emanate a torque-dependent magnetic field, and a sensor system comprising one or more magnetic field sensors responsive to said stress-dependent magnetic field to provide a signal representing the stress generated between one and the other of said radially inner and outer regions.

16. (Amended) A torque sensing transducer system comprising a transducer element which is as claimed in claim 1 and which has a torque transmission path extending from one to the other of said radially inner and outer regions of said structure through said at least one magnetised region to emanate a torque-dependent magnetic field, and a sensor system comprising one or more magnetic field sensors responsive to said stress-dependent magnetic field to provide a signal representing the stress transmitted between one and the other of said radially inner and outer regions.

17. A transducer as claimed in claim 16 in which said member is adapted as a torque transmitting part capable of transmitting a rotational drive applied to said inner region of said structure to a load applied to said outer region thereof or <u>vice versa</u>.

18. (Amended) A transducer as claimed in claim 15 in which said member is disc-shaped.

19. (Amended) A transducer system as claimed in claim 15 in which said one or more magnetic field sensors is disposed and oriented to detect a circumferential magnetic field component and provide a signal representing same.

20. A transducer system as claimed in claim 19 further comprising a magnetic field sensor device disposed and oriented to detect a radial magnetic field component and provide a signal representing same.

21. A transducer system as claimed in claim 20 further comprising signal processing circuitry responsive to said signals representing the circumferential magnetic component and the radial magnetic field respectively to derive an output signal representing the circumferential magnetic component referred to the radial magnetic field.

22. A torque or force transducer element

comprising a member adapted to transmit torque or force applied along, on or about an axis extending through the member to a portion of the member spaced from said axis, or vice versa,

said member having a surface transverse to said axis,

a first, outer, region located between said axis and said portion and extending to said surface;

a second, inner, region located between said axis and said outer region and extending to said surface,

Cont'd Sub A5 Cont

said first and second annular regions, being magnetised with opposite polarity, and cooperating at said surface to generate a magnetic field component which is a function of said torque or force.

23. A transducer element as claimed in claim 22 in which said first and second regions are annular and encircle said axis, or at least one of the annular regions is an interrupted annulus, or said first and second regions are arcuate with respect to said axis.

24. (Amended) A transducer element as claimed in claim 22 in which said first and second regions are both longitudinally magnetised to develop a radial magnetic field component extending therebetween at said surface and a circumferential magnetic field component at said surface that is a function of torque.

25. (Amended) A transducer element as claimed in claim 22 in which said first and second regions are both circumferentially magnetised to develop a radial magnetic field component at said surface as a function of torque.

Sub A5 Cont

26. A torque or force transducer assembly comprising

first and second members coaxially disposed,

said first member being of greater diameter than said second member,

a disc-like member extending generally radially of said axis and connecting said first member to said second member for transmitting force from one member to the other, said disc-like member comprising two magnetised annular regions that are at least arcuate or annular or are part annular,

Sub A5 end ~~~ cont'd

said magnetised regions having a magnetisation such that the regions cooperate to generate a magnetic field component that is a function of a stress established in transmitting a load between said first and second members.

27. A transducer assembly as claimed in claim 26 in which said assembly is adapted to transmit torque from one of said members to the other.

28. (Amended) A transducer assembly as claimed in claim 26 in which said magnetised regions are longitudinally magnetised with opposite polarities or circumferentially magnetised with opposite polarities.

29. A transducer assembly as claimed in claim 26 in which said first and second members are mounted to cause flexing of said disc-like member in response to relative axial displacement of the first and second members.

30. A transducer assembly as claimed in claim 26 in which said first and second members are disposed to cause flexing of said dis-like member in response to a relative displacement of said first and second members away from axial alignment.

<u>Remarks</u>

Please enter this amendment prior to calculating the filing fee.

Respectfully submitted,

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